



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/734,716	12/13/2000	Koichiro Mizushima	041-2077	3360

7590

04/02/2004

CLARK & BRODY  
SUITE 600  
1750 K STREET NW  
WASHINGTON, DC 20006

EXAMINER

NGHIEM, MICHAEL P

ART UNIT

PAPER NUMBER

2863

DATE MAILED: 04/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

m

<b>Office Action Summary</b>	<b>Application No.</b> 09/734,716	<b>Applicant(s)</b> MIZUSHIMA, KOICHIRO	
	<b>Examiner</b> Michael P Nghiem	<b>Art Unit</b> 2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 January 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) 3-17, 24-30, 32-44 and 47-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 31 is/are rejected.
- 7) ☒ Claim(s) 2, 18-23, 45 and 46 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1-5-04</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

The Amendment filed on January 12, 2004 has been acknowledged.

#### ***Petition***

1. The Petition under 37 CFR 1.144 has been entered on January 12, 2004 and a decision is pending.

#### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file. However, the priority document 11-354182 does not appear to disclose the species of Figs. 13-14. Thus, the current application for patent may NOT be entitled to the benefit of the filing date of a priority document 11-354182. Should applicant desire to obtain the benefit of foreign priority under 35 U.S.C. 119(a)-(d), a translation of the foreign application should be submitted under 37 CFR 1.55 in reply to this action.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Admitted Prior Art of Fig. 22 (APA).

APA discloses all the claimed features of the invention including:

- a method and apparatus for estimating a direction of a sound source (Fig. 22), as an angular value in relation to a fixed position (page 1, lines 18-20), comprising:
  - in each of a succession of fixed-length time windows (dt), operating on respective microphone output signals (signals from 901, 902) resulting from reception of sound emitted from said sound source (page 1, line 19), said microphone output signals produced from an array of M (2) microphones (901, 902), where M is a plural integer (Fig. 22), to thereby extract from each of said microphone output signals a time-axis signal portion by a waveform extraction means (905) and thereby obtain successive sets of M audio signal portions with said sets corresponding to respective ones of said time windows (Fig. 22);

- frequency analyzer means (906) for applying frequency analysis to separate each said signal portion into a plurality of components (SA, SB) corresponding to respectively different ones of a fixed set of frequencies (via 906);

- processing means (907-910) for each frequency of said fixed set, processing said components to obtain data expressing a frequency-based direction of a sound source with respect to a position in said microphone array (velocity),

- calculating an average of respective frequency based directions (direction based on a time difference or delta time, page 2, lines 23-24) obtained for all frequencies of said fixed set (angular direction, page 3, lines 1-2), to thereby obtain an estimated direction corresponding to one time window (page 3, lines 1-3).

### ***Allowable Subject Matter***

4. Claims 2, 18-23, 45, and 46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

5. Applicant's arguments filed on January 12, 2004 have been fully considered but they are not persuasive.

With respect to the claim of priority, Applicants argue that the submitted Fig. 6 of the Japanese patent corresponding to the priority document in question discloses components found in Fig. 13 of the current application.

However, the submitted Fig. 6 drawing is missing from the file. On the other hand, it is not clear that Fig. 6 of the priority document (11-354182) discloses the components found in Fig. 13 of the current application.

With respect to the 35 USC 102 rejections, Applicants argue that Admitted Prior Art (APA) of Fig. 22 does not disclose fixed-length windows  $dt$ , nor a succession of such time windows. The duration of the interval  $dt$  is variable and depends entirely on the speed of the sound source.

Examiner's position is that Japanese Patent Soichi et al. (JP 5-114098, described by APA of Fig. 22) discloses fixed-length windows ( $dt$ :  $dt_1$ ,  $dt_2$ , ...  $dt_n$ ) shown in Fig. 2. Even though the windows ( $dt$ ) may or may not be "equal-length" windows, they are fixed-length windows, i.e., the length of each window  $dt$ :  $dt_1$ ,  $dt_2$ , ...  $dt_n$ , does not change.

Applicants further argue that APA of Fig. 22 does not teach that the output signals are produced from an array of  $M(2)$  microphones (901, 902). The output signals from the microphones (901) and (902) are selected by a changeover circuit (905), i.e., with only

one signal at a time being transferred to circuit (905). This is not an array, wherein the signals from the respective microphones would be processed during the same time interval.

Examiner's position is that APA of Fig. 22 clearly shows that the output signals are produced from an array of two microphones (901, 902). An array, as argued by Applicants, wherein the signals from the respective microphones would be **processed during the same time interval**, is not defined or recited in the claims.

Applicants further argue that the circuit (905) of Fig. 22 does not teach a waveform extractor means.

Examiner's position is that the circuit (905) of Fig. 22 selectively samples signals from (901) and/or (902). Thus, the circuit (905) extracts waveform (or signal) from either microphone (901 or 902).

Applicants further argue that APA of Fig. 22 does not teach "a plurality of components corresponding to respectively different ones of a fixed set of frequencies".

Examiner's position is that APA of Fig. 22 teaches "a plurality of components (SA, SB, specification, page 2, lines 8-10) corresponding to respectively different ones of a fixed

set of frequencies (SA, SB have different frequencies corresponding to a fixed set, 901, 902)".

Applicants further argue that APA of Fig. 22 does not obtain "data expressing a frequency-based direction of a sound source" and "an estimated direction corresponding to one time window".

Examiner's position is that APA of Fig. 22 discloses "data expressing a frequency-based direction of a sound source (angle of vector in frequency vector distributions SA, SB obtained in 907)" and "an estimated direction corresponding to one time window (direction of sound source is based on time difference, page 2, line 23 – page 3, line 3)".

### ***Reasons For Allowance***

6. The combination or method as claimed wherein for each of said time windows, calculating an average direction as an average of an estimated direction corresponding to said each time window and respective estimated directions corresponding to a fixed plurality of time windows which directly precede said each time window, and outputting said average direction as a finally obtained estimated direction corresponding to said each time window (claim 2) or judging when a sound source has passed through a specific direction, by comparing said successive estimated directions obtained for said sound source with a predetermined passage detection range of



directions, and generating data expressing a passage detection result when said sound source is found to have passed through said specific direction (claims 18, 45) is not disclosed, suggested, or made obvious by the prior art of record.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### ***Contact Information***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Nghiem whose telephone number is (571) 272-2272. The examiner can normally be reached on M-H from 6:30AM – 5:00 PM.

Art Unit: 2863

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached at (571) 272-2269. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'Michael Nghiem', with a stylized flourish at the end.

**MICHAEL NGHIEM  
PRIMARY EXAMINER**

Michael Nghiem

March 30, 2004